



# Just transition: Integrating climate, energy and environmental justice

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## ABSTRACT

Just transition is a new framework of analysis that brings together climate, energy and environmental justice scholarships. It was originally coined as a term that was designed to link the promotion of clean technology with the assurance of green jobs. The Paris climate change agreement marks a global acceptance that a more rapid transition is needed to avert disastrous consequences. In response, climate, energy and environmental justice scholarships must unite in assessing where injustices will emerge and how they should be tackled. Just transition offers a new space for developing an interdisciplinary transition sensitive approach to exploring and promoting (1) distributional, (2) procedural and (3) restorative justice, termed here as a new triumvirate of tenets.

## 1. Introduction

The term “just transition<sup>1</sup>” was originally proposed by global trade unions in the 1980s. It became a mobilising term for promoting green jobs as a necessary component of the transition away from fossil fuels (Abraham, 2017). From this perspective, the move away from fossil fuels entailed the wholesale shutdown of multiple associated industries. The development of new energy industries offered the potential for green jobs. The jobs argument was placed at the center of the just transitions concept. Criticisms have emerged against this term as it can lead to a ‘jobs versus environment or climate’ frame, which can be used detrimentally against communities and the transition. We agree with Healy and Barry (2017) that the concept of just transition has the possibility to transcend its original strategic purpose. It could result in greater state intervention to ensure green jobs or present a labour-based incentive for speeding up decarbonisation policies (Altintzis and Busser, 2014). We argue, instead, that it could have the potential for uniting climate, energy and environmental (CEE) justice to provide a more comprehensive framework for analysing and ultimately promoting fairness and equity throughout the transition away from fossil fuels.

The urgent need to accelerate the transition could, and should, unite CEE justice scholarship (Heffron and McCauley, 2018). In this way, we build upon just sustainabilities (Agyeman et al., 2002; Evans et al., 2003) as a previous attempt to unite scholarships (in that case sustainability, environmental justice and equity). The trade union origins of the just transition concept were explicitly positioned within the environmental justice movement (Doorey, 2017; Stevis and Felli, 2015;

Bullard, 1996; Abraham, 2017; Patterson and Smith, 2016). Environmental justice literature is grappling with how to balance the social and environmental dimensions involved in this transition (Evans and Phelan, 2016; Sharma-Wallace, 2016; Rodríguez-Labajos and Özkaynak, 2017; Horney et al., 2018; Kubanza et al., 2017). Climate justice is most focused upon effective global justice transitions that can deal with the implications of the inevitable consequences of rapid climate change for vulnerable groups in the (not exclusively) Global South (Kortetmäki, 2016; Shaw, 2016; Skillington, 2017; Mihr, 2017; Meyer and Sanklecha, 2017; Baptiste and Rhiney, 2016; Fuller, 2017). Energy justice scholars incorporate the idea of transition both from the production viewpoint of moving towards low carbon sources (Heffron et al., 2015; McCauley et al., 2016; Lappe-Osthege and Andreas, 2017; Healy and Barry, 2017) as well as the consumption-based concerns of achieving energy efficiency in the long term without compromising individual well-being or community cohesion (Bouzarovski and Simcock, 2017; Damgaard et al., in press; Rasch and Köhne, 2017; McCauley, 2018b; Welton, 2018). And yet, each justice scholarship suffers through the lack of a joint conceptual space for reflection. The transition involves an inherently intersectoral dimension involving all three prominent justice scholarships. The urgency of the transition must be met with a similar thrust for justice scholars in developing new consolidated frameworks of analysis to provide sustainable long-term solutions.

We identify the two dominant frames of analysis used by all three justice scholarships to be (1) *distributional* and (2) *procedural justice*. The coverage of inequalities associated with the transition are frequently

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<sup>1</sup> Please note that we concentrate on this specific understudied term, rather than the more overused incarnations of transition-based research such as socio-technical systems (STS).

determined by distributional or procedural understandings. It is time for each area of scholarship to more explicitly engage in contesting and developing our thinking in both areas within the context of a just transition. Environmental justice has reminded us that proximity continues to be an important consideration with regards to the injustices experienced by individuals or communities (Hricko et al., 2014). Scholarship in this area, combined with new thinking in climate and energy justice scholarship, have challenged researchers to think beyond proximity (Olawuyi, 2016; Shaw, 2016; Bouzarovski and Herrero, 2016; Schlosberg, 2013; Walker, 2009; Holifield et al., 2018). All three have experienced the same analytical turn away from quantitative distributional, and especially proximity-based, studies towards more qualitative procedural based research (McCauley, 2018c). This has equally led to innovations in all three justice scholarships. If we are to achieve a just transition, justice scholarship must come together to develop both dimensions. We also present a third dimension (completing our new triumvirate of tenets<sup>2</sup>) which is currently under-developed, namely (3) *restorative justice*. We argue that all three areas of scholarship should engage with thought in this area. Just transition can offer this space for such an engagement.

## 2. Why do we need a just transition?

We are now living in a 400 ppm (parts per million) world with levels unlikely to drop below this symbolic milestone in our lifetime (WB, 2017a, 2017b). The world is witnessing an acceleration of associated events in different locations of the world leading to many damaging events occurring. In researching justice within this context, there needs to be a full appreciation of the multiple realities of the world, i.e. that research needs a global perspective and actions even at a local level have national and international effects. In justice research, this issue has been identified with Agyeman (2014) acknowledging that environmental justice scholars need to ensure their research scope is global and human rights focused rather than exclusively civil rights and local focused; and this is comparable to calls from energy justice scholars (Heffron and McCauley, 2017; McCauley, 2018). Forsyth (2014) has in a similar way called for climate justice scholars to have a more global perspective which is slowly beginning to be responded to with a plethora of new case studies (Fuller, 2017; Bailey, 2017; Ambrey et al., 2017; Godden and Tehan, 2016; Baptiste and Rhiney, 2016).

A key injustice in energy is the over-reliance of today's global societies on the historically embedded production systems of fossil fuels to satisfy growing energy demands. According to the International Energy Agency (IEA, 2016), the world is producing over double output today than in 1973. In both years and the interim period, fossil fuels heavily dominate the world's energy production. In 2016, oil, coal and gas amount to 86% of the world's energy supply, experiencing only a small drop from 90% in 1973 (McCauley, 2018d). The just transition is needed to capture the 'just' process when societies move towards an economy free of CO<sub>2</sub> emissions. Justice is an important element to the transition. Often the rhetoric of governments, companies, institutions and researchers discuss 'a transition to low carbon economy' and then there is no mention of 'just'.

Transitioning away from fossil fuels in the global context presented above, however, is proving to be very difficult and slow. For example, in 2016, fossil fuels accounted for 81.5% of the UK's primary energy needs, down only half a percent from 2015 (Carbon Brief, 2017). Consider other examples from the UK in relation to investment in energy infrastructure and also foreign aid: in 2016, £18.6 billion (10.3% of total investment in the UK) was invested, of which 34% was in oil

and gas extraction, 54% in electricity, 11% in gas, with the remaining in coal extraction, and coke & refined petroleum products industries (BIES and UKSA). Now while the amount of investment in electricity is not presented in more detail, considering most of the electricity sector (54%) is fossil fuels (BIES and UKSA), the majority of this investment is similarly in fossil fuels. Further, the continued support given to fossil fuels by the UK is exemplified by national foreign investment policy where through development aid, the UK supports by a ratio of nearly two to one, fossil fuel projects (CAFOD, 2017).

Globally, there is a need to recognize that change is needed. For example, seven climate records were broken last year in 2016: melting of Arctic ice; consecutive hottest months; hottest day in India ever; highest temperature in Alaska; consecutive and biggest annual increase in CO<sub>2</sub>; hottest Autumn in Australia ever; and highest amount of destruction in Australia's Great Barrier Reef (Guardian, 2016). Further, coal plant construction is on the increase, particularly, in many developing countries. Indeed, there is quite simply too much fossil fuels in the global energy system. Hence, at an international level, it should be acknowledged that the transition needs to happen at an accelerated pace, while its slowness, however, is the norm (Figueres et al., 2017).

A central problem for CEE justice research is the often-assumed domination of neoliberalism. Neoclassical economics at least aims in theory to achieve competitive markets but has unfortunately underpinned the neoliberal agendas which have led to the opposite result intended. Traditional economics has not yet delivered positive 'just' outcomes for society. This neoliberal viewpoint and its botched drive for competition have led to the current *malaise* of many sectors in the economy. It has created an oligopolistic market where usually the market share of the leading three to six firms is greater than 90 per cent, including electricity retail and banking retail. Such markets have become almost too big to fail, as illustrated by the public transfer of £60 billion annually to the top-five banks in the UK in subsidies over the financial crisis period of 2007–2009 (Heffron et al., 2015). Still, the philosophical underpinnings of mainstream economic policy have not advanced. If anything, it has significantly added to societal inequality; and in terms of traditional economics, it is held here that a neoliberalist stance on the neo-classical school of thought still dominates economic policy-making and this echoes with research done in the fossil fuel community (Rist, 2016).

Meaningful reform continues to escape global societies. The failure to reform the financial system post-crisis of 2007–2009 demonstrates, for example, the willingness of societies to accept ongoing policy failure. Clear parallels of what society will accept is evident in the ongoing failures of climate, energy and environmental policies; for example, international debate and changing rhetoric where the energy source 'gas' is now classed as a 'cleaner fuel' or even 'transition fuel', and a lower-carbon energy source (Cotton et al., 2014; Crowe et al., 2015). Within this context, research, policy and activist communities within CEE scholars often treat their concepts as separate constructs despite the uniting shared goal of a low- or post-carbon economy. Urgent work is needed to provide a unified perspective on justice scholarship in the three areas of justice scholarship, and it is through the just transition concept that this can be achieved.

## 3. What is the just transition?

The just transition is defined here as 'a fair and equitable process of moving towards a post-carbon society'. This process must seek fairness and equity with regards to the major global justice concerns such as (but not limited to) ethnicity, income, gender within both developed and developing contexts. By its very nature, this transition must take place at a global scale, whilst connecting effectively with multi-scalar realities. It involves the development of principles, tools and agreements that ensure both a fair and equitable transition for all individuals and communities. We currently live in a world which is dominated by fossil fuels, amounting to 82% of the world's energy supply (IEA, 2016).

<sup>2</sup> We refer to this triumvirate of tenets as 'new' as the original usage of this term came in McCauley et al. (2013) Advancing energy justice: the triumvirate of tenets. *International Energy Law Review* 3: 107–111. Our new focus brings in new conceptualizations of distributional and procedural justice whilst putting forward restorative justice as the new third tenet.

It has only experienced a small drop from 90% in 1973. The Paris climate change agreement marked a drastic step away from a carbon-based world. This change will not happen overnight. Most projections suggest that fossil fuels will continue to dominate, in the most optimistic view, until 2035 (BNEF, 2016; BP, 2017; EIA, 2017; GP, 2015; IRENA, 2016; WEC, 2016). Added to this, rates of consumption are expected to increase by around 25–34% globally in the next twenty years, with the world's population reaching 8.8 billion (BP, 2017). Throughout the foreseeable future, the world will gradually move away from fossil fuels.

The urgency of carbon reduction necessitates a united conceptual approach to guarantee justice throughout this transition. The concept of just transition is not new (as explored above). Within a climate justice context, the broad frame of transitioning in a fair and equitable manner has been used to shed light on major future challenges facing the Global South in areas such as the Caribbean (Baptiste and Rhiney, 2016) or Hong Kong (Fuller, 2017). Antarctica is an example in the literature where Verbitsky (2014) raises such a frame to warn of impending problems. Global South states have largely ignored the potential of this continent. As the world's temperature increases, the continent threatens to become embroiled in disputes between Global North and South states over the boundaries and ownership of various resources. This raises major questions over process and outcome in sharing these resources (Verbitsky, 2014). As argued below, climate justice only provides one understanding of just transitions where Global South (though not exclusively) and climate change concerns dominate whether it be urban infrastructure in Australia (Ambrey et al., 2017; Bailey, 2017) or other city based projects (Fawcett et al., 2017; McKendry, 2016) or rural contexts where carbon projects are taking place (Mathur et al., 2014) or within local communities in Africa under the REDD+ programme (Godden and Tehan, 2016). We need to also include the conceptual advances put forward by environmental and energy justice.

A current example of what Verbitsky's prediction may look like can be found in energy justice literature on the Arctic regions. The more easily accessible resources of this continent have led to multiple disputes over the mining and transportation of oil and gas throughout the past twenty years, impacting upon other resources and practices such as fisheries or reindeer herding (McCauley et al., 2017). The focus in this research is less determined by climate change or Global South interests. It is rather the injustices caused by increased demand for new sources of fossil fuels (McCauley et al., 2016; Sidortsov and Sovacool, 2015). In the US, energy justice research has revealed the need to divest in fossil fuels (Healy and Barry, 2017), whilst embracing carbon taxes, renewable energy and energy efficiency schemes (Finley-Brook and Holloman, 2016). Climate justice provides a long-term temporal aspect to just transitions (Gearty, 2014; Skillington, 2017; Mihr, 2017), whilst energy justice has concentrated upon the current contestations and disputes over resources (Rasch and Köhne, 2017; Liljenfeldt and Pettersson, 2017; Lappe-Osthege and Andreas, 2017). This turns our attention to environmental justice where the term 'just transition' has greater prominence within the context in which it was first raised by the global labour movement (Evans and Phelan, 2016).

Whilst just transition originating from the trade union movement is historically connected with environmental justice, it is frequently overlooked by leading scholars (Holifield et al., 2018; Walker, 2012; Schlosberg, 2007). The use of just transition in environmental justice literature, when it has been used, has concentrated on the various successes and failures of the "green" (i.e. environment only) and "brown" (i.e. jobs and public health) frames for mobilising opposition to energy infrastructures (Abraham, 2017). Evans and Phelan (2016) demonstrate that the green approach towards environmental justice hindered the transition away from coal mining in New South Wales, Australia. The adoption of a singular focus in environmental justice on the ecological impacts of coal mining was found to hold back the success of civil society campaigns. The paper assesses two such campaigns that were designed to resist the regional hegemony of fossil fuel

interests. The battle between jobs and environment created division between community and labour movement interests. The just transition frame of combining both an environmental and jobs focus is identified as a potential turning point.

Just transition has more to offer than what is currently realized in its usage by CEE justice scholars. We argue that its analytical reach must continue to embrace but also move beyond the simplicity of its origins, which focus on promoting a jobs-based solution to the transition to a post carbon society. We of course acknowledge the importance of the job argument, as well as the broader inevitable cost allocation that the transition entails (e.g. electric vehicles, smart devices etc.). It can nevertheless offer a space to bring together the three major justice scholarships. The inequality today for individuals and communities in both the Global South and Global North will transform dramatically in unison with the transition away from fossil fuels. Rather than depending upon how the term just transition is currently used, we suggest that it should be a new analytical framework that brings together state-of-the-art thinking in (i) distributive, (ii) procedural and (iii) restorative justice. We identified these three dimensions as central to CEE justice scholarship to date and in the future – with the third on restorative justice being the least explored to date. By bringing them together, we can better assess the challenge of transition, cutting across the three key sectors of environment, climate and energy.

#### 4. A comprehensive approach towards *distributional justice*

Environmental justice has provided a wide range of studies in this area based upon exploring proximity as a central concept (Clough and Bell, 2016; Hricko et al., 2014; Childs, 2014). McKenzie et al. (2016) demonstrates that 78,000 people Colorado live within one mile as a classic study of the burdens associated with environmental bads such as polluted rivers (Loo, 2007), water tables (Cotton et al., 2014) and more broadly the environmental implications of living close to major infrastructures (Laurian, 2008). Ethnicity and race within this context have been a central focal point for environmental justice scholars and activists (Bullard and Wright, 2009; Bullard, 2003, 1996). From a distributional perspective, research scholars in this area have revealed where community resistance takes place. Carruthers (2007) demonstrates where protest movements against the actions of companies takes place along the US Mexico border. With the increased need to build new energy infrastructure, proximity will remain an important component to be assessed when considering a just transition. The central argument of contemporary environmental justice scholarship is, however, set out by Walker (2009, 2012; ) and Schlosberg (2013) who both argue that there is an urgent need to explore injustices that take place outside the analytical framework of proximity – a call reinforced in more recent work (Gellers and Jeffords, 2018; Holifield et al., 2018).

This analytical turn emerged from frustration with the dominance of quantitative studies in exploring the proximity issue by largely US scholars. It has, partly, resulted in a focus upon the qualitative (though not exclusively of course) dimensions of injustice often reflected in procedural studies (as explored below) as well as in new distributional frameworks in the form of (a) capabilities and well-being (b) risk and responsibility (c) vulnerability and (d) recognition. The concept of capability centered justice was developed by Sen (2011) and Nussbaum (2011). They argue that a person's freedom to pursue functionings (which constitutes a person's being, including both well-being and agency) is as important as individual rights. As our societies transition towards a post-carbon world, an individual's capabilities, not just their rights, may be infringed (Welton, 2018; Tomain, 2017). Alternatively, Damgaard et al. (2017) show that adopting renewables can lead to greater functions for communities and individuals. Whilst we observe such distributional research in environmental justice beyond proximity (Acey, 2016; Reese and Jacob, 2015; Gellers and Jeffords, 2018), climate and energy justice scholarships have adopted more readily these new frameworks of distributional analysis.

Climate justice has allowed researchers to explicitly reflect upon the distribution of risks and responsibilities (Barrett, 2013; Olawuyi, 2016; Shaw, 2016; Thorp, 2014). Climate change involves what is referred to as “a double inequality” (Barrett, 2013: 1819), where the distribution of risk and responsibility are inverted. The Global North is responsible for the large part of the negative consequences associated with climate change but remain the least affected. Conversely, the Global South are less responsible for such consequences, but is set to experience the major consequences through impacts upon livelihoods, assets and security (Schlosberg, 2017; Meyer and Sanklecha, 2017). Distributional injustices are therefore conceptually untied from proximity as a central concept. This allows us to explore more broadly the ways in which inequalities are distributed throughout the world, no longer bound to geographical proximity. The identification of where risks and responsibilities lie lends itself directly to exploring where the most vulnerable communities are and how they adapt.

Energy (as well as climate) justice contributes to research on vulnerabilities (Hernandez, 2015; Reames, 2016). Rather than focusing upon communities that are at the sharp end of climate change, energy justice research demonstrates where communities are vulnerable in terms of access or affordability (Bouzarovski and Simcock, 2017; Reames, 2016; Hernandez, 2015). This has directly led to studies in energy poverty (Faiella and Lavecchia, 2015; Lim et al., 2015), fuel poverty (Middlemiss and Gillard, 2015; Walker and Day, 2012) and energy vulnerabilities (Bouzarovski et al., 2017; Cauvain and Bouzarovski, 2016). It reminds us that injustices in the form of vulnerability can also exist outside the specific context of climate change. Climate and energy justice research has also developed from what has been termed as “the post distributional” (Bulkeley et al., 2014) analytical frame of recognition. The notion of misrecognition emerged in the works of Fraser (2008, 2014; ) within the context of climate justice movements. Within an energy context, it is often associated with shedding light on the misrecognition of marginalised groups such as ethnic minorities, disabled, elderly or students (McCauley et al., 2013; Welton, 2018). A just transition approach to distributional injustices must therefore adopt the full range of approaches in exploring distributional inequalities which emerge to different extents across CEE justice.

## 5. Uniting frameworks to achieve procedural justice

The transition away from fossil fuels will generate new senses of injustice surrounding processes of community engagement and involvement. Procedural justice has concentrated around the siting of new infrastructure within environmental justice literature (Higginbotham et al., 2010; Kohli and Menon, 2016; Gellers and Jeffords, 2018). Distributional studies have demonstrated that a wide range of harmful infrastructure and more generally perceived ‘bads’ has been located within areas of social deprivation or ethnic diversity (Harrison, 2014; McKenzie et al., 2016; Pfeffer et al., 2002; Curran, 2018). This has resulted in protest movements designed to bring attention towards this injustice (Liu et al., 2014; McCauley, 2009, 2013). Hess (2016) and Acuna (2015) argue that procedural justice is often the platform for justice demands – albeit often inadequate by itself to ensure a resolution. Procedural justice can instigate long-term engagement processes with the affected community. Gowda and Easterling (2000) reveal how the US government successfully designed a process of engagement with Native American communities to site high-level civilian nuclear waste. It is an example from an environmental justice perspective where interaction with the community resolved potential conflict. Marques et al. (2015) shows us that procedural approaches in environmental justice are indeed often site specific but also based upon an awareness of local identity, as in their study of the construction of two dams in Portugal.

We still find similar locality specific case studies in climate and energy justice literature (Fisher, 2015; Lappe-Osthege and Andreas,

2017). They have, in addition, inspired the widening of what is understood to be procedural justice in four major ways through the development of (a) resilience and adaptation (b) from protest to acceptability (c) supply chain and whole systems (d) practices and behaviours. These offer procedural justice scholars a wider range of analytical frames for understanding the transition away from fossil fuels. Procedural justice within a resilience context is still focused upon sites and localities. The major difference here is that the engagement processes are designed specifically to allow communities to respond positively to major shocks instigated by climate change (Forbes et al., 2009; Patterson and Smith, 2016). The focus is less on reducing or avoiding conflict due to the construction of a given infrastructure. Archer and Dodman (2015) examined the procedural elements of capacity building in Indonesia and Thailand where both case studies indicate that procedural based capacity building is necessary for developing knowledge and understanding of the technical aspects of climate change and responses to it.

A second extension of the procedural component of justice is evident in climate justice literature. The original approach set out by environmental justice literature as outlined above is often focused upon production-related activities and associated infrastructures. A key component of the transition to a post-carbon society is energy efficiency (Mayne et al., 2017; Fuller, 2017; Fawcett et al., 2017; Ambrey et al., 2017; Walker et al., 2016; Schlosberg and Collins, 2014; Barrett, 2013). The site of study, in this sense, has moved away from large-scale industry and communities towards households where traditional practices are reimagined within a post-carbon society (Stern et al., 2016). This has been driven by Shove (2010) in demonstrating the challenges involved in understanding the behaviours and practices of householders. Externally driven engagement practices are replaced by self-initiated practices. A third extension of the procedural concept emerges from energy justice literature. The focus on energy systems brings an inherent multiplication of study sites considering the comprehensive nature of a national energy systems. Procedural justice is re-conceptualised as taking place in multiple locations, from mining to waste (Heffron and McCauley, 2014; McCauley et al., 2013; McCauley, 2018a).

A fourth extension originates primarily in the energy justice focused literature. It equally demonstrates that protest is not always the origin for procedural justice to take place. Firestone et al. (2012) demonstrates through a survey with householders in Massachusetts that the perception of an effective public process of engagement when siting wind infrastructure leads to the long-term acceptance of a community towards renewable infrastructure. The expected slowdown in infrastructure associated with fossil fuels will be replaced by the urgent need to speed up the construction of alternative renewable systems of provision (McCauley, 2018c). The focus of procedural justice has, in this way, moved from viewing protest as an integral component of the engagement process to a mechanism for ensuring the long-term acceptability of renewables in communities (Yenneti and Day, 2015). Simcock (2016) reveals for example that community led schemes can be more successful (but not always) in ensuring long-term acceptability. An excellent example of such a scheme that aims to incorporate consumers in policy making in new ways is the REV (Reforming the Energy Vision) programme in New York (REV, 2018), with similar schemes in Hawaii, Vermont, California and Minnesota.

## 6. Inspiring new frameworks for restorative justice

The concept of just transition emerged with an inherent restorative element in its strategic use by trade union movements in the 1980s (Abraham, 2017). The wholesale shutdown of cost intensive fossil fuel industries such as mining, or more accurately the transportation of such activities to lower cost areas of the world, resulted in US trade union movements demanding the restoration of lost jobs (Stevins and Felli, 2015). The unions agreed to support the rise of cleaner technologies if



job losses could be at least restored to its previous level (Doorey, 2017). Restoration as a concept has not been explored in sufficient detail by the three justice scholarships. There is, of course, an implicit dimension of procedural justice which includes restorative arguments. Meaningful engagement and inclusion of affected societies through procedural justice is designed to restore trust between the alleged perpetrator and affected communities. The lack of explicit critical analysis of restoration threatens the full transformative potential, which is often wrongly understood as an end in themselves, rather than the comprehensive restoration of senses of injustice.

Restorative justice predates the emergence of just transition as well as the three major justice scholarships explored in this paper. It arose as a central component in law, where intense questioning ensues after an injustice has occurred (McAlinden, 2011; Welton et al., 2015). Its primary aim is to repair the harm that has been done to an individual, rather than simply focusing upon punishing the offender. It can also help in identifying where prevention needs to occur. Within a legal context, it has been mainly applied in relation to criminal law, and in relation to corporate crime (Hamilton, 2015). Within the context of the transition away from fossil fuels, it is not simply the loss of jobs from associated industries that will require restorative justice solutions. There are questions surrounding past damages that have already occurred, existing crimes perpetrated against not only individuals (Gibbs, 2009), but also the environment (Dorsey, 2009; Fox et al., 2016) and the climate (Bernstein, 2016; Posner and Sunstein, 2008), as well as the unforeseen harms that will be administered throughout the transition to a post-carbon world.

Environmental justice literature has predominantly focused explicitly on the restorative angle with regards to the environmental damage caused by heavy intensive industrial activities (Anand, 2016; Banerjee, 2018). Dorsey (2009) reveals that businesses in the 1970s left urban areas with a legacy of polluting industries containing hazardous waste in storage or on local soil and water to build on cheaper land in the suburban areas of the city. His research focuses on the restorative environmental activities needed for urban areas. He argues, however, that “the notion of restorative environmental justice provides opportunities for corporate decision-makers and public officials to rectify or ameliorate situations that disenfranchised or harmed particular communities in the past”. This reminds us that environmental restoration is intimately connected with social processes of remediation. Fox et al. (2016) reinforce this connection further in their assessment of the environmental impacts associated with the removal of dams in New England. As one of their interviewees commented, “you killed the dam, you are killing a part of me”. Environmental restoration processes may, therefore, exude positive or negative implications which necessitate new integrated frameworks for analysis and ultimately solutions.

Just transition provides an opportunity to bring together state-of-the-art existing thought in the three justice scholarships, as well as developing new integrative dimensions such as restorative justice. From a climate justice perspective, Bernstein (2016) argues from a philosophical viewpoint that the UNFCCC process is wholly inadequate for achieving climate justice and what she calls corrective (often used interchangeably with restorative) justice. Posner and Sunstein (2008) make explicit restorative justice considerations in reframing US obligations to pay more for climate change adaptation and mitigation measures. Climate justice offers a more global and historical development of restorative justice than currently considered environmental justice literature. In addition, energy justice brings an understanding of restorative justice which is based upon holding energy providers to account, which builds upon the polluter pays principle from environmental and climate justice (Caney, 2010). Heffron and McCauley (2017) argue that restorative justice principles could legally enforced before an energy provider commits to a new programme of infrastructures through embedding such considerations in environmental impact assessment in support of Hamilton (2015) and social licence to operate.

## 7. Conclusion: towards a new triumvirate of tenets

The transition towards a post-carbon world means that justice scholarship must unite to develop comprehensive frameworks of analysis. The trade union movements in the 1980s could see that the world was in the process of a major transformation which involves serious consequences for society. The Paris climate change agreement marks a global acceptance that this transformation is due to speed up as the gravity of climate change becomes apparent. The concept of just transition must respond to this new reality. The impact will no longer restrict itself to the jobs losses in a handful of developed nations. It implicates individuals and communities throughout the world, both in the Global North and Global South. The impacts are also not restricted to society. This transition is reshaping our environment and global ecosystem, as well as the climate of the future.

A reframing of the just transition concept beyond its original strategic purpose can unite climate, energy and environmental justice scholarships. We argue that the reframing process of just transition should involve a comprehensive approach to the two most common dimensions of all three scholarships, namely distributional and procedural justice. Existing scholarship in these areas have established a detailed understanding of the key justice-based considerations to be considered when reflecting on where injustices take place and how we should attempt to solve them. We argue that each of the scholarships have developed multiple foci which need to be united in the face of the impending urgent transition. We also identified restorative justice as a particularly important dimension to be expanded further as procedural justice can sometimes not go far enough in ensuring that perpetrators are brought to justice and affected individuals find solace.

We call on justice researchers to explore the multiple implications of the transition to a post-carbon society through the application of this new triumvirate of tenets (distributional, procedural and restorative). The just transition framework enables researchers to more explicitly reflect upon the intersectionality of environment, climate and energy, assess justice issues from a truly interdisciplinary perspective and ultimately contribute to meaningful long-term solutions.

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